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ABSTRACT

This paper investigates the development of negative Wh-questions in a four year old subject acquiring English as her L1. Spontaneous and elicited speech samples were collected over a period of 6 months. During the course of the study, the subject began to invert subject and auxiliary, and by the end of the study she was inverting correctly in 38% of obligatory contexts. Possible relations between L1 and L2 acquisition processes and developmental sequences are discussed, and the most recent trends in L2 acquisition research are summarized. (Author/AMH)

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THE L1 ACQUISITION OF ENGLISH NEGATIVE WH-QUESTIONS: A CASE STUDY

by

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INTRODUCTION

Second language teachers and teachers in bilingual education programs are very concerned with understanding the processes of second language acquisition, so that they may facilitate these processes for their learners. Recently, second language (L2) acquisition research has taken some new directions. These directions increasingly show the influence of first language (L1) acquisition research. Meanwhile, both avenues of investigation are still in their infancies.[1]

The purpose of this paper is two-fold: 1) to review and summarize some of the most recent L2 acquisition research in light of the L1 acquisition research of the 1960's 2) to make an extremely limited contribution to the L1 acquisition research by examining the development of English negative Wh-questions in a longitudinal case study of one subject.

It has been pointed out that a very limited number of subjects has been studied in the L1 research to date,[2] and also that few replications have been done.[3] I hope that my study, and others like it, may help to fill this need.

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[1]Kenji Hakuta and Herlinda Cancino,"Trends in Second-Language-Acquisition Research," Harvard Educational Review 47 (August 1977): 294-295.

[2]Elaine Tarone, A Discussion of the Dulay and Burt Studies (Bethesda, Md.: ERIC Document Reproduction Service, ED 123 876, October 1974), p. 1.

[3]Elaine Tarone, "Some Limitations to the Classroom Application of Current Second Language Acquisition Research," TESOL Quarterly 10 (March 1976): 19.

L1 ACQUISITION RESEARCH: A SUMMARY WITH SPECIFIC REFERENCE TO THE DEVELOPMENT OF QUESTIONS AND NEGATION

The first students of child language have always been parents informally observing the "miracle of language development"in their own children. The 1960's brought the application of modern, formal techniques of study to children of different cultures by researchers at Harvard, Berkeley, Stanford and other institutions.[1] Before looking specifically at some of their findings, I should mention some ideas on the role which cognitive development plays in language development.

The relationship between language and thought, between language development and cognitive development, is complex and controversial. We must at least insist that language development not be studied in a vacuum, set apart from cognitive development. Dan Slobin suggests, "...the pacesetter in the child's linguistic development is the child's cognitive growth," in other words, language is used to express only what the child already "knows."[2] As evidence for the primacy of cognitive development he cites the following

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[1]Charles A. Ferguson and Dan Isaac Slobin, eds., Studies in Child Language Development (New York: Holt, Rinehart and Winston, Inc., 1973), p. viii.

[2]Dan Isaac Slobin, "Cognitive Prerequisites for the Development of Grammar," in Studies in Child Language Development, eds. Charles A. Ferguson and Dan Isaac Slobin (New York: Holt, Rinehart and Winston, Inc., 1973), p. 184.

example from the Harvard children studied by Roger Brown and others: They showed understanding of the meaning of the concept of possession well before attaining linguistic control of English possessive inflections.[1] For Slobin, the process seems to be one of cognitive development giving rise to communicative intentions for which "...new means of expression must be forged."[2] He also suggests that when a child's cognitive development has temporarily outstripped her formal grammatical development, idiosyncratic rules will be invented.[3] Following is an example from my subject, Abigail, age four years, six months:

> Friend: "I'm going to my grandma's for Christmas."
> Abigail: "So am I. So then we'll never see ourselves, so then we'll never see our.... So then you'll never see me for Christmas, and I'll never see you for Christmas!"

She had not yet acquired the reciprocal form "each other," although she well understood the concept of a reciprocal action. The preceding example also brings to mind Paula Menyuk's suggestion that the motivation for the child's acquisition of more complex structures might be the economy they introduce.[4]

Slobin goes on to suggest that although cognitive

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[1] Ibid., p. 185.

[2] Ibid., p. 186.

[3] Ibid.

[4] Paula Menyuk, Sentences Children Use (Cambridge: MIT Press, 1969), p. 38.

development is primary in determining sequence and rate of language development, there is a point at which "formal linguistic complexity" also plays a role. The problem is to determine what constitutes "formal linguistic complexity" for the child.[1] This will affect the duration of the "lag" which exists, Slobin suggests, between the appearance of a communicative intention (verified non-linguistically) and the mastery of the conventional linguistic form which the child's native language offers for the realization of that intention.[2] It does not seem unreasonable to hypothesize that languages may differ in the accessibility to the child of the linguistic means for expressing a given meaning.[3] Such differences are of great importance to students of childhood bilingualism.

Granting, then, the primacy of cognitive development, what else has been learned about children's acquisition of their first language? I will begin by emphasizing what children do <u>not</u> do. Menyuk states firmly, "...the child does not simply repeat what he hears."[4] For example, my data from Abigail (see Appendix 1) include many examples such as the following: "Why you never let me stay up late?" The adults around her never use this form. Imitation, then, has

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[1]Slobin, p. 181.

[2]Ibid., p. 187.

[3]Ibid., p. 183.

[4]Menyuk, p. 32.

been found to play a very minimal role in first language acquisition. Nor have reinforcement and other behaviorist principles been found effective in explaining the data.[1] Finally, children do not suddenly begin to produce adult forms of a given structure at a fixed point in time.[2] The process is, rather, a gradual one, as my data will illustrate.

What, then, do children do when learning their first language? What processes have been found to be at work? What is the developmental course of language acquisition?

First of all, children formulate systematic rules for processing language which change as the child's language develops.[3] Menyuk found evidence that, even as early as the single morpheme utterance stage, children had internalized a syntactic system which they expressed by applying various intonational markers to their one-word utterances.[4] The best evidence that child language development is rule-governed is the systematic deviations which occur in child speech. My subject, at age four years and six months, consistently produced negative Wh-questions in the following way: "Why I can't have a friend over?" Apparently, at that stage her "question-formation grammar" included a rule for pre-posing

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[1]David McNeill, The Acquisition of Language (New York: Harper & Row, 1970), p. 112.

[2]Roger Brown, Courtney Cazden, and Ursula Bellugi, "The Child's Grammar from I to III," in Studies in Child Language Development, eds. Charles A. Ferguson and Dan Isaac Slobin (New York: Holt, Rinehart and Winston, Inc., 1973), p. 321.

[3]Courtney Cazden, "Children's Questions: Their Forms, Functions and Roles in Education," Young Children 25(March 1970): 209-210.

[4]Menyuk, p. 28.

the Wh-word, but did not include a rule for transposing the subject and auxiliary verb. That the child's internal rules are changing is demonstrated by the fact that a few months later Abigail began to transpose subject and auxiliary. The focus of the research has been not so much on the child's knowledge or lack of knowledge of adult rules, but rather on the intermediate rules which the child adopts temporarily in her progress toward control of the adult structure.[1] This focus holds true whether the investigation has involved acquisition of an inflectional system or of a syntactic structure.

Second, the child's rules change from more general to more specific. At earlier stages, children use rules of maximum generality and gradually replace these with rules of increasing specificity.[2] The evidence for this is the overgeneralization which is characteristic of child speech. At one stage, for example, the simple past tense is consistently realized by forms such as "goed," comed," "buyed." At a later stage, the child's "past tense formation rule" is revised to include the irregular forms.

Third, the acquisition of language is a very gradual process. As Klima and Bellugi put it, "A characteristic of

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[1]Moshe Anisfeld and G. Richard Tucker, "English Pluralization Rules of Six-Year Old Children," in Studies in Child Language Development, eds. Charles A. Ferguson and Dan Isaac Slobin (New York: Holt, Rinehart and Winston, Inc., 1973), pp. 212-214.

[2]Cazden, p. 210.

child language is the residue of elements of previous systems..."[1] concurrent with the emergence of a new system. My data show that even after "mastering" (see definition on page31) the rules for forming affirmative Wh-questions at age four years, eight months, Abigail still used her earlier non-transposed form in 7% of such questions.

Fourth, forms in child speech which are initially rigidly tied to a specific context later become part of more general and flexible structures. For example, the negative auxiliaries "don't" and "can't" first enter the child's speech as unanalyzed wholes. At later stages they are analyzed and the child comes to control them as part of her total auxiliary system.[2]

Fifth, there are cognitive constraints which are operative on children's language development. Memory capacity is a factor since, as Slobin puts it, "...speech is produced and processed sequentially in a rapidly fading modality."[3] As the child matures, memory capacity and thus MLU (mean length of utterance) increase.[4] However, more is involved than simply length of utterance. The number of processes, such as transformational rules, which must be combined to produce an

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[1]Edward Klima and Ursula Bellugi, "Syntactic Regularities in the Speech of Children," in Studies in Child Language Development, p. 343.

[2]Cazden, p. 210.

[3]Slobin, p. 199.

[4]Menyuk, p. 38.

utterance, as well as the kinds of dependency relationships involved, may be more important constraints than length. For example, tag questions such as, "Mother and Daddy are home, aren't they?" develop relatively late, although they are very short. Bellugi suggests that this is because of the complex relationship between the shape of the sentence and the shape of the tag.[1] It is interesting to note that English tag questions also pose considerable difficulty to second language learners.

Finally there are individual differences not only in the rate of language development, but also in sequence and style. These differences become more pronounced above the 4.00 MLU level.[2] Some children are more prone than others to invent their own grammatical patterns. Some children are willing to speak at any time whether or not they have the appropriate syntactical structures to express their thoughts.[3]

One other point relating to L1 acquisition should be mentioned here. There are really two aspects to the child's developing linguistic competence: 1) production of utterances in accordance with linguistic rules 2) recognition or comprehension of well-formed sentences.[4] Investigators have had

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[1]Cazden, pp. 210-212.

[2]Ibid., p. 208.

[3]Slobin, p. 193.

[4]Anisfeld and Tucker, p. 212.

to be careful to specify which aspect they are researching. Menyuk suggests that there may be differences between a child's production grammar and her comprehension grammar.[1] Brown, Cazden and Bellugi note that comprehension of a structure need not always precede production.[2] And Klima and Bellugi conclude that, "Sentences the child understands describe the scope of his grammar more accurately than those he produces."[3]

I shall now examine in more detail the L1 acquisition of English questions and of the English negation system. My examples are from Klima and Bellugi's longitudinal study of three children at Harvard, published in 1966. The children are referred to in the literature as Adam, Eve, and Sarah. Their acquisition of various syntactic systems was divided by the researchers into several "stages" or "periods" based on mean length of utterance (MLU) calculated in morphemes.[4]

Interrogation is universal to languages. Piaget defined the question as "...a spontaneous search for information." Cazden refers to "...the obvious importance of question-asking in intellectual life, and therefore in education."[5] The two most common types of questions in adult English are

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[1]Menyuk, p. 16.

[2]Brown, Cazden and Bellugi, p. 320.

[3]Klima and Bellugi, p. 335.

[4]Cazden, p. 205.

[5]Ibid., p. 202

yes/no and Wh-questions.[1] A transformational analysis of adult yes/no questions shows that, basically, one transformation is required to produce the surface structure. This is the Interrogative Transformation, which involves transposing the auxiliary with the noun phrase. For example, the deep structure "The boy can drive the car." becomes the surface structure "Can the boy drive the car?"

Wh-questions in well-formed English involve two transformations in order to derive the surface structure from the deep structure: 1) the Pre-position Transformation, in which an appropriate question word is substituted for the indefinite pronoun and placed at the beginning of the sentence 2) the Interrogative Transformation (transposing auxiliary with noun phrase). Thus, the deep structure "He is going somewhere." is transformed into "Where he is going?" (Pre-position Transformation) and then into "Where is he going?" (Interrogative Transformation).[2]

In recording the speech of eighteen-month-old babies, Menyuk noted a distinct interrogative sentence type, formed by applying rising intonation to a one-word utterance.[3] Klima and Bellugi identified three periods in the development of both yes/no and Wh-question types. At Period I the rule for yes/no questions was: $S \rightarrow Q^{yes/no}$ + nucleus, where the question marker was realized as rising intonation. At Period II, more

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[1] Ibid., p. 203.

[2] Ibid., pp. 203-204.

[3] Ibid.

complex sentences were being questioned, and the negative auxiliaries "don't" and "can't" appear. At Period III for yes/no questions, the children had begun to invert the auxiliary with the subject noun phrase appropriately.

EXAMPLES OF CHILDREN'S YES/NO QUESTIONS

Period	Examples
I	I ride train? Sit chair? } rising intonation
II	Mom pinch finger? You can't fix it? This can't write a flower?
III	Does the kitty stand up? Can I have a piece of paper? Are you going to make it with me?

For Wh-questions, Period I was characterized by these rules: $S \rightarrow Q^{what} + NP + (doing)$

$S \rightarrow Q^{where} + NP + (go)$

At Period II the interrogative word "why" was added, and the sentence nucleus became more complex. At Period III for Wh-questions the development of an auxiliary verb system is evident, but auxiliaries are <u>not</u> yet inverted with the subject noun phrase. Not until a later period (Period IV) does the inversion of the auxiliary extend to Wh-questions. At this point the auxiliary is inverted only in affirmative Wh-questions. Period V extends the inversion of the auxiliary to negative Wh-questions as well.[1]

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[1]Klima and Bellugi, pp. 347-353.

EXAMPLES OF CHILDREN'S WH-QUESTIONS[1]

Period	Examples
I	What cowboy doing? Where Kitty go?
II	Why you waking me up? What the dollie have?
III	How he can be a doctor? Where I should put it? Why Paul caught it?
IV	Why are you thirsty? Why we can't find the right one?
V	Why can't they put on their diving suits and swim?

It should be pointed out that the above account, based on examples of children's production of questions, must be expanded to include tests of their comprehension. Klima and Bellugi found, for example, that at Period I for Wh-questions, a question such as "What cowboy doing?" only superficially ressembled adult Wh-questions in which the object of the verb has been questioned and pre-posed. As evidence they cite exchanges such as the following in which the child responds inappropriately:

Mother: What did you hit?
Child: Hit.[2]

The system of negation in adult well-formed English involves interaction between the negative particle (not, n't) and the auxiliary system. If no auxiliary is present, "do"

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[1]Cazden, p. 207.

[2]Klima and Bellugi, p. 348.

occurs with"not," generally contracted as "don't." In addition, since the negation system of Standard English permits only one negative formant per main verb, the indeterminants (somebody, something, etc.) are converted to indefinites (anybody, anything, etc.) in the context of a negative formant.[1]

As with the interrogative system, Klima and Bellugi divide children's acquisition of negation into periods. At Period I, the negative formant is located outside the utterance. The rule seems to be: $\left.\begin{matrix}\text{no}\\\text{not}\end{matrix}\right\}$+nucleus. There are no auxiliaries in the child's speech at this stage. At Period II the negative formant moves to within the sentence. "Can't" and "don't" appear, but function as unanalyzed wholes, since auxiliaries are not occuring in affirmative or interrogative utterances at this stage. There seems to be a coexistence between the Period I and Period II systems at this stage. There is comprehension evidence at Period II that children <u>understand</u> the negative embedded in the auxiliary:

Mother: He doesn't have a ball.
Child: Why not he have a ball?

At Period III, the auxiliary verbs can now be considered as separate from the negative element of the sentence, since they also appear in both affirmative and interrogative utterances. There seem to be rules for "be-deletion" and "do-deletion" at this stage. It is well after Period III that the complex relation of the negative and the indefinite is mastered.[2]

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[1]Ibid., pp. 337-338.

[2]Ibid., p. 353.

EXAMPLES OF CHILDREN'S NEGATIVES[1]

Period	Examples
I	No Mom sharpen it. No more. No the sun shining.
II	He no bite you. I can't watch you. I don't want it.
III	Paul didn't laugh. Donna won't let go. No, it isn't. Paul not tired. I not hurt him.

The development of negation exemplifies one of Slobin's "universals" of language acquisition: that development proceeds from external placement of a linguistic form to internal placement, within the sentence.[2]

[1] Ibid., pp. 341-345.

[2] Slobin, p. 200.

L2 ACQUISITION RESEARCH: A SUMMARY OF RECENT TRENDS

A first language is normally acquired in infancy and early childhood through natural interaction between the child and her family and caretakers. A second language may be acquired at any age, and the setting may vary from naturalistic interaction with peers who speak the target language to formal, structured classroom instruction. In discussing L2 acquisition, especially when making comparisons between L1 acquisition and L2 acquisition, one must be careful to specify the age of the learners and the conditions under which language acquisition is taking place.

From the 1940's to the 1960's, under the influences of structural linguistics and behaviorist psychology, the contrastive analysis view came to dominate the field of second language acquisition research. In its strong form, the contrastive analysis hypothesis held that learners' difficulties could be predicted from structural differences between the native language and the target language. However, systematic study of learners' errors has shown that a large proportion are <u>not</u> predictable on the basis of contrastive analysis; nor do learners in fact make all the errors predicted by contrastive analysis. A weak version of the contrastive analysis hypothesis, in which errors are not predicted but rather the errors which do occur are accounted for, still

survives. The contrastive analysis approach seems to have greatest value at the level of phonology.[1]

In the 1960's, research into first language acquisition began to blossom. Chomsky's theory of transformational-generative grammar was having a great impact both on psychologists and linguists. The students of child language were able to describe children's errors in terms of an underlying rule-governed system evolving toward full adult grammar, rather than as products of imperfect learning. The learner's role came to be seen as one of active hypothesis-testing. The influence of this early L1 acquisition research on L2 research was great and led to approaches such as error-analysis and interlanguage.[2]

Burt and Dulay used the error-analysis approach in a well known cross-sectional study published in 1972. Their subjects were children ages five through eight whose native language was Spanish and whose target language was English. They used the Bilingual Syntax Measure to elicit the target language and then classified the errors made by the children. They reported 3 percent of the children's errors to be the result of interference from Spanish. 85 percent of the errors were classified as "developmental," i. e., similar to errors made by children acquiring English as a <u>first</u> language. (An example of a developmental error would be: "José want Miss Jones." The L1 research of the 1960's has shown that children

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[1]Hakuta and Cancino, pp. 295-296.

[2]Ibid., p. 297.

in the early stages of acquiring their first language generally omit functors.)[1] The remaining 12 percent of the children's errors were described as "unique."[2] Based on this study, Dulay and Burt suggested the L1 = L2 hypothesis: "The acquisition of a target language by second language learners will parallel the acquisition of that same language by first language learners." This hypothesis limits itself to child L2 acquisition and makes no claims about adults.[3] Just as in L1acquisition, the role of the child learning a second language is seen as an active one of organizing the L2 speech she hears and making generalizations about its structure.[4] There are really two aspects to the L1 = L2 hypothesis: 1) Children below puberty <u>will</u> make errors in L2 syntax similar to L1 developmental errors and 2) Children below puberty will <u>not</u> make errors that reflect transfer of the structure of their L1 onto the L2 they are learning.[5] Dulay and Burt also believe that the strategies for L2 acquisition by children are universal.[6]

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[1]Heidi C. Dulay and Marina K. Burt, "Should We Teach Children Syntax?" <u>Language Learning</u> 23 (December 1973): 236.

[2]Ibid., p. 249.

[3]Herlinda Cancino and others, <u>Testing Hypotheses about Second Language Acquisition: The Copula and Negative in Three Subjects</u> (Bethesda, Md.: ERIC Document Reproduction Service, ED 123 873, June 1974), pp. 3-4.

[4]Dulay and Burt, p. 236.

[5]Ibid., p. 241.

[6]Ibid., p. 257.

Criticism of the Burt and Dulay hypothesis has come from several directions. It has been pointed out that the error may not be an appropriate unit of analysis. Rather, the learner's overall performance and the longitudinal development of linguistic structures should be examined.[1] Nor does the Burt and Dulay approach take into account the extent to which learners avoid producing L2 forms which they do not know. The relative opportunities for occurrence for "interference" vs. "developmental" errors may be quite different.[2]

In spite of its shortcomings, the Burt and Dulay research has been a referent for most of the L2 acquisition studies that have been carried out since. In 1974 Milon reported a study of the development of English negation in Ken, a seven year old Japanese boy. He compared his subject's acquisition of negation with Klima and Bellugi's three periods for first language acquisition. He found that Ken's developmental periods occurred in the same sequence and within the same "syntactic parameters" as those reported by Klima and Bellugi for Adam, Eve and Sarah. Milon agreed with Burt and Dulay that "...second language learners, at least up to a certain age, have access to universals of language acquisition" and that "...native-like language learning

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[1]Hakuta and Cancino, pp. 298-303.

[2]Tarone, "Limitations to Classroom Application," p. 28.

ability could remain a human characteristic up to the age of puberty."[1]

COMPARISON OF L1 AND L2 ACQUISITION OF NEGATION[2]

Period	L1 Acquisition Examples (Adam, Eve and Sarah)	L2 Acquisition Examples (Ken)
I	No Mom sharpen it. No more. No the sun shining.	No my turn. No work. No more sister.
II	He no bite you. I can't watch you. I don't want it.	You no can go. I not going Japan. Me no win.

(The most obvious parallel here between L1 and L2 development is the movement of the negative element from outside the utterance to within the utterance.)

Milon's equation of Ken's acquisition of negation with Klima and Bellugi's three periods has been called into question because, among other things, of his subject's exposure to Hawaiian Creole English, which differs from Standard English in some aspects of negation.[3] However, the pedagogical conclusions which he drew still seem warranted. (See the Conclusions and Applications section of this paper.)

Another recent focus for L2 acquisition research which shows the influence of L1 research is the interlanguage

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[1]John P. Milon, "The Development of Negation in English by a Second Language Learner," TESOL Quarterly 8 (June 1974): 142-143.

[2]Ibid., pp. 138-140.

[3]Hakuta and Cancino, p. 304.

hypothesis. It suggests that, like children learning their first language, second language learners proceed through stages of an "interlanguage," which consists of a set of systematic rules having characteristics of both the native and target languages. This interlanguage is "a system of interlingual forms" which evolve in successive acquisitional stages from initial through advanced learning.[1] Such a focus views the acquisition process as Burt and Dulay did, as active hypothesis testing on the part of the learner. However, the interlanguage hypothesis does not exclude interference. Rather, it sees interference, or language transfer, as one possible learner hypothesis, namely that the target language is just like the native language for a given structure.[2]

Most recently, the L2 acquisition research has been directed to the following questions:

1) What are the processes and strategies which the learner uses to acquire an L2?

2) To what extent are the processes applied in L2 acquisition identical to those used to acquire an L1?

3) Do all learners apply the same set of universal processes and strategies?

4) Are the developmental sequences the same for L1 and L2 acquisition?[3]

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[1]Cancino, p. 4.

[2]Hakuta and Cancino, pp. 297-298.

[3]Henning Wode, Developmental Sequences in Naturalistic L2 Acquisition (Bethesda, Md.: ERIC Document Reproduction Serivce, ED 129 075, August 1976), p. 4.

First I will examine some studies which would answer question 4 above in the affirmative, that is, that tend to confirm the L1 = L2 hypothesis. Ravem reported a study of his two children's acquisition of English Wh-questions. His was a longitudinal study. The children's L1 was Norwegian, and they were acquiring English in a naturalistic setting. Ravem reported that the stages his children passed through in acquiring Wh-questions were parallel to the stages for L1 English acquisition. Interference or transfer from Norwegian was not significant. Specifically, lack of inversion of subject and auxiliary in Wh-questions was a feature of the children's speech at one stage, despite the fact that well-formed adult Norwegian inverts these elements like English.[1] (See Appendix 1 for examples of L1 English lack of inversion in Wh-questions.)

Nicholas Sobin, in a study also dealing with Wh-questions, reported similar results. Unlike Ravem, Sobin based his conclusions on data from adult learners acquiring English as an L2 in a structured, university setting. His subjects' native language was Spanish. Sobin's learners passed through a stage of producing sentences such as "What Max had to do yesterday?" Sobin sees their lack of inversion as a necessary stage in acquisition rather than as an undesirable one. He makes reference to Klima and Bellugi's Period III in which children did not yet invert for Wh-questions. Citing

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[1] Roar Ravem, "The Development of Wh-Questions in First and Second Language Learners," in Error Analysis, ed. J. C. Richards (London: Longman, 1970), pp. 134-155.

many cross-linguistic studies, he phrases his conclusions in terms of language acquisition universals: Interrogative word pre-posing is always acquired before subject-auxiliary inversion. There is an inherent dependency of inversion on the existence of Wh-word initial question structure across languages. Finally, lack of inversion is likely to be a temporary feature of any learner's English. Even when the native language has a rule for inversion, this rule is not transferred to the target language. He suggests as an area for further research the question of why the rule for inversion is acquired relatively late.[1]

In reading Sobin's study I was surprised that he made no mention of the fact that in Spanish, inversion is not universally obligatory. Uninverted Wh-questions such as "¿Qué tú estás haciendo?" are quite common. I will now look at some recent studies which give more importance to the role of interference or transfer from the native language, and thus tend to disprove the L1 = L2 hypothesis. Cancino carried out a longitudinal study of six Spanish-speaking sujects' natural, untutored acquisition of the English negation system. Two of her subjects were children, two were adolescents and two were adults. All had been exposed to English for less than three months prior to the start of the study. Cancino chose the negative specifically because it had been treated extensively in the L1 acquisition literature. She found that

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[1]Nicholas Sobin, Notes on the Acquisition of Interrogative Word Questions (Bethesda, Md.: ERIC Document Reproduction Service, ED 144 377, April 1977), pp. 1-15.

her subjects' acquisition of the English negation system did not correspond to Klima and Bellugi's three periods for children acquiring English as a native language. For example, at Period I her subjects used patterns other than $\left.\begin{matrix}\text{no}\\\text{not}\end{matrix}\right\}$+nucleus, such as a no + is construction which Klima and Bellugi's children did not have. Also, her subjects' examples which did resemble the no + nucleus construction could be explained on other grounds, especially in reference to Spanis' Cancino concludes that a strong version of the L1 = L2 hypothesis must be rejected, since the acquisition sequence of the English negative by her L2 learners did not correspond to the periods described by Klima and Bellugi for L1 learners.[1]

A similar conclusion was reached by Wode in his recent study of four German-speaking children, ages three through nine, naturalistically acquiring English as an L2. He focused on the interrogative system so as to be able, as Cancino did with the negative, to make comparisons with the L1 research of Klima and Bellugi. Wode found that, although naturalistic L2 acquisition does follow ordered developmental sequences, these sequences are not completely identical to the respective L1 acquisition sequences.[2] He goes on to suggest that the L1 and L2 developmental sequences vary as a function of the L1 acquired previously. Wode sees reliance on the L1 as

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[1]Cancino, pp. 1-17.

[2]Wode, Developmental Sequences, p. 1.

"...an integral part of L2 acquisition."[1] For him, the questions then become:

1) At what points in the developmental sequence is prior L1 knowledge drawn upon?

2) What type of prior linguistic knowledge is made use of, and under what conditions?[2]

Following are some examples which Wode gives to support his rejection of the L1 = L2 hypothesis. Klima and Bellugi showed that there is a stage for children's L1 English (Period III) in which yes/no questions show inversion of the auxiliary and do-support, while Wh-questions show no trace of either operation.

yes/no	Wh
Does lions walk?	Where my spoon goed?
Will you help me?	What he can ride in?

For Wode's German children learning English, inversion first occurred in copula Wh-questions such as, "What is it fishing pole?" Also, do-support occurred earlier in Wh-questions("How do you clean them?") than in yes/no questions ("You see that?" "You see my little football?") for his English as an L2 learners.[3] (I must interject here that Wode may not be aware that there seems to be an optional rule for do-deletion in informal English, which his children may be exposed to. My daughter, especially when talking with her friends, uses yes/no structures such as "You wanna

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[1]Henning Wode, The L1 vs. L2 Acquisition of English Interrogation (Bethesda, Md.: ERIC Document Reproduction Service, ED 153 468, March 1978), p. 18.

[2]Wode, Developmental Sequences, pp. 19-20.

[3]Wode, L1 vs. L2 Acquisition of Interrogation, p. 17.

play Candy Land?" "You gotta go home now?")

Wode gives many examples of his children's reliance on their German L1 in forming hypotheses about their new English structures. He suggests that this type of "interference" takes place only when the L1 and L2 have structures meeting a "crucial similarity measure."[1] The notion of interference, he feels, can be useful, but it needs to be developed.[2] As another researcher put it, "...the role of language transfer (both positive and negative) in L2 learning must not be underestimated; it must be understood..."[3]

Wode makes two additional points in reporting his study. First, he stresses that the individual variation among children in developmental sequences must not be overlooked. For example, even among his four subjects there was great variation in the order of acquisition of both morphemes and structures.[4] Second, he urges investigators not to lump together naturalistic L2 acquisition and formal teaching of an L2 (as he criticizes Burt and Dulay for doing). He feels that one cannot assume the acquisition processes to be the same in both cases. His rationale for investigating naturalistic L2 acquisition is that it should "...lay bare the child's own contribution to classroom L2 instruction."[5]

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[1]Wode, Developmental Sequences, p. 26.

[2]Ibid., p. 28.

[3]Tarone, "Limitations to Classroom Application," p. 23.

[4]Wode, Developmental Sequences, p. 24.

[5]Ibid., p. 3.

As the age of the learner increases and the learning situation becomes more structured, the variables which must be considered in L2 acquisition research multiply, and comparisons between L1 and L2 acquisition processes become more dangerous. For one thing, children learning their first language seem to require no further motivation beyond the need to communicate. Older L2 learners, however, may have vague and ill-defined communication needs in the new language. Psychological variables such as self-identity, introversion vs. extroversion, and empathy come into play; whereas earlier L1 acquisition was uninhibited and free from disabling self-consciousness. The learner's cultural background, the prestige of the L2, the learner's previous experience with her L1, the caliber of the L2 instructor, the learner-teacher relationship: all these factors are involved in the L2 acquisition process in a formal setting.[1]

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[1]David C. Thompson, Overview of Major Theories and Identification of Crucial Factors in the Acquisition of First and Second Language Skills (Bethesda, Md.: ERIC Document Reproduction Service, ED 149 588, 1977), pp. 14-20.

SOME METHODOLOGICAL ISSUES

There have been two methodological approaches to language acquisition study: naturalistic observation of spontaneous speech and experimental elicitation. The former has usually been used with a small number of subjects over a relatively long period of time. The latter has usually dealt with a larger number of subjects in a cross-sectional study.[1]

There are limitations to both methods. Spontaneous speech collection alone is inadequate and should be supplanted by experimental tests, since we cannot assume that what the subject happens to say is all that she is capable of saying.[2] On the other hand, there is a danger in experimentally elicited data that the subject's speech may be influenced by what the experimenter says.[3] Of course another consideration is that spontaneous speech collection is very time-consuming and inefficient when you are just focusing on one particular structure or aspect of development.

If both methods of data collection are used, as in my study, it is important to keep the data separate. Wode found that his children did not necessarily produce the same speech patterns in response to experimental elicitation as

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[1]Slobin, p. 210.

[2]Cazden, p. 208.

[3]Menyuk, p. 36.

they did in spontaneous speech.[1] It has also been questioned whether longitudinally acquired data can be compared with cross-sectional studies. The results may not be equivalent.[2]

Sentence imitation is a particular type of experimental test which has been discussed extensively in the literature. It is generally agreed that imitation can tap both the comprehension and production aspects of language development. Beyond certain limits of length and complexity, accurate imitation of syntactic structures involves first decoding of the structure, followed by encoding according to the learner's current production system. Thus, data obtained through imitation may be interpreted to determine the stage of acquisition of a given structure.[3]

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[1]Wode, Developmental Sequences, p. 3.

[2]Tarone, "Limitations to Classroom Application," p. 26.

[3]Merrill Swain, Alternatives to Spontaneous Speech: Elicited Translation and Imitation as Indicators of Second Language Competence (Bethesda, Md.: ERIC Document Reproduction Service, ED 123 872, June 1974), pp. 4-5.

PROCEDURES FOR THIS STUDY

The subject is a female child age four years, six months at the beginning of the study and four years, ten months at the end of the study, acquiring English as a first language. I tape recorded her at home in spontaneous conversation with friends and family. I collected spontaneous speech samples at three intervals: ages 4.6, 4.8 and 4.10. At each interval I recorded approximately four hours of tape, which I then transcribed. I isolated all examples of Wh-questions, both affirmative and negative, and classified them as to whether subject-auxiliary verb inversion was present or absent.

I supplemented the spontaneous speech data with three experimental elicitation procedures: 1) directed questions (the Old Lady Test) 2) analogy (the Alligator Test) and 3) sentence imitation of correct (inverted) and deviant (uninverted) Wh-questions. The Old Lady Test involves working with the child and a favorite doll, stuffed animal or puppet. The exporimenter directs the child to ask the puppet certain questions. The following exchange is a typical example: Experimenter: Ask Mr. Potato Head what he is.
Subject: What are you?

The Alligator Test involves the use of two dolls or animals. The experimenter makes them carry on the following

type of exchange:

Experimenter: I don't have anybody to play with.
(as Bear)
Experimenter: Why don't you have anybody to play with?
(as Alligator)

After a while, the subject is told, "Now you be the alligator." (Of course I used my own subject's favorite toys, which she was used to identifying with.)

Sentence imitation involves simply telling the subject, "Say what I say." I taped all the above tests and then transcribed the results.

RESULTS FROM SPONTANEOUS SPEECH DATA

The results from my spontaneous speech data are presented on page 33 in table and graph forms. I wish to point out several things in summarizing these data.

At the beginning of the study, the subject was at a stage corresponding to one of the later stages for the Klima and Bellugi children. She inverted subject and auxiliary for affirmative Wh-questions in the majority of cases (83 percent of obligatory contexts), but she never inverted for negative Wh-questions.

As the study progressed, she increased her inversion for affirmative Wh-questions to the mastery level, defined by Brown as correct use in 90 percent of obligatory contexts.[1] She also began to invert in negative Wh-questions. However, by the end of the study inversion in negative Wh-questions (only 38 percent of obligatory contexts) still had not reached mastery level.

Near the middle of the study, at age four years, eight months, we see the first appearance of what I will call an "intermediate" form in the acquisition of the negative Wh-question. The subject asked, "Why do you don't wanna drink milk?" Another example occurred two months later: "Why d'ya don't like teachers?" She had provided the auxiliary "do"

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[1]Slobin, p. 191.

in front of the subject, but she had left the negative formant, attached to a second "do," in uninverted position. I classified these "intermediate" forms with the deviant forms for the purpose of the graph. I have found no mention in the literature of other children using such a form at any stage of development.

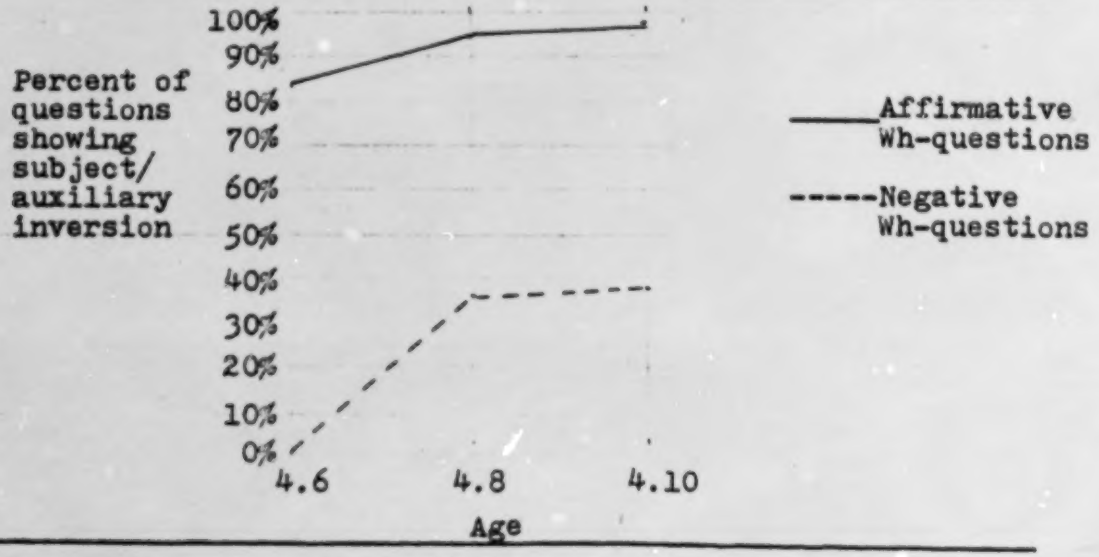
RESULTS FROM SPONTANEOUS SPEECH DATA

AFFIRMATIVE WH-QUESTIONS

	Age		
	4.6	4.8	4.10
Number of questions inverted	39	43	54
Number of questions uninverted (deviant)	8	3	2
Total number of affirmative Wh-questions	47	46	56
Percent inverted	83%	94%	96%

NEGATIVE WH-QUESTIONS

	Age		
	4.6	4.8	4.10
Number of questions inverted	0	4	6
Number of questions uninverted (deviant)	12	6	9
Number of intermediate forms	0	1	1
Total number of negative Wh-questions	12	11	16
Percent inverted	0%	36%	38%



RESULTS FROM EXPERIMENTALLY ELICITED DATA

The results from the experimentally elicited data are presented on page 36 in table form. If we compare the results from spontaneous speech collected at four years, eight months with those obtained from elicitation devices at the same age, we get different results. The subject seems to be further behind in development on the basis of the experimental data. For example, for negative Wh-questions she was inverting in spontaneous speech in 36 percent of obligatory contexts at this point; however, the Old Lady Test and the Alligator Test show her inverting in 0 percent and 5 percent of cases, respectively. These results correspond to those obtained by Wode for L2 acquisition. His children used more structures from earlier stages in elicitation experiments than they did in spontaneous speech.[1] I do not know specifically which elicitation devices Wode was referring to. In my own experiments, however, I will suggest that the experimenter's immediately antecedent indirect questions or statements may have influenced the word order of the subject's Wh-questions. This is a danger in experimentally elicited data, and in this case, I believe the spontaneous speech data are a more reliable indicator of the subject's stage of development. Also, it seems much preferable to elicit structures nonverbally, if this can be done.

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[1]Wode, L1 vs. L2 Acquisition of Interrogation, p. 5.

For the sentence imitation test, I constructed long questions averaging about twenty morphemes. I was hoping to go beyond the immediate memory capacity of the subject to get at her syntactic processing. First I gave her correct Wh-questions to repeat. She reproduced all affirmative Wh-questions accurately. However, one of the negative Wh-questions was reproduced in another variation of an "intermediate" form:

Experimenter: Why don't you ever let me have a friend over after school, so I don't get so bored?
Subject: Why you don't you ever let me have a friend over after school, so I don't get so bored?

Next I gave her uninverted (deviant) questions to repeat. She made no corrections of the negative examples. However, she <u>did</u> correct one of the affirmative questions:

Experimenter: Why we have to put that tarpauline around David when it's raining hard outside?
Subject: Why do we have to put that tarpauline around David when it's raining so hard outside?

I am not sure how much I was testing anything beyond simple memory capacity. However, the above examples seem to support the other data in showing that the subject was in a period of transition with respect to her production of these structures. She was moving in a direction of inverting more frequently for both affirmative and negative Wh-questions.

RESULTS FROM EXPERIMENTALLY ELICITED DATA
(AGE 4 YEARS, 8 MONTHS)

THE OLD LADY TEST (DIRECTED QUESTIONS)

	Affirmative Wh-questions	Negative Wh-questions
Number of questions inverted	5	0
Number of questions uninverted (deviant)	1	6
Total number of Wh-questions	6	6
Percent inverted	83%	0%

THE ALLIGATOR TEST (ANALOGY)

	Affirmative Wh-questions	Negative Wh-questions
Number of questions inverted	15	1
Number of questions uninverted (deviant)	4	18
Total number of Wh-questions	19	19
Percent inverted	79%	5%

CONCLUSIONS AND APPLICATIONS

Several conclusions may be drawn from this case study. One of Slobin's language acquisition universals is that structures requiring permutation of elements will first appear in non-permuted form.[1] This is certainly true of my subject's affirmative and negative wh-questions. The question is why. Bellugi hypothesized a limit on the number of grammatical operations which can be performed on a single utterance at a given stage of development.[2] In other words, there were cognitive constraints operating at age four years, six months which kept my subject from being able to invert for her negative Wh-questions.

A question which interests me is what determines whether a given Wh-question will be inverted or not during the developmental period in which the new form and the earlier form are co-existing. I am tempted to suggest that the subject's affective state may influence her choice of form. It seemed to me that when her Wh-questions expressed anger, protest or frustration, rather than a simple request for explanation, she tended to use the uninverted form.

"Why you have apple juice and I have milk?" (indignant)
"Why I can never stay up late?" (outraged)

It is important to look beyond syntax to semantics. The above examples, although syntactically questions, may have more in common, semantically, with exclamatory statements.

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[1] Slobin, p. 199.

[2] Ibid., p. 196.

My data seem to support Wode's criticism of Klima and Bellugi's stages as being too rigid. Wode believes there to be a high degree of overlap between stages. Depending on the situation, the child may use structures she has been thought to have outgrown long ago.[1]

In general, my data support the findings of the L1 researchers that first language acquisition occurs in an ordered sequence of stages, that children formulate rules, that these rules are modified gradually, and that there are cognitive constraints on children's speech, operative at any given stage.

There are several pedagogical implications which this study has suggested to me. The first has to do with a difference between Standard English and Black English. In mature Standard English, the inversion transformation is a "categorical" rule which is rarely violated. In mature Black English it is a "variable" rule with considerable individual variation and certain probabilities of occurrence. For example, a mature speaker of Black English may say, "Why you didn't go to school?" or "What I'm thinking of?" This feature of mature Black English coincides in form with a stage in the language development of Standard English speaking children, as shown in the appendices of this paper. A teacher might make the misinterpretation that Black English is an immature version of Standard English, confusing dialectal with developmental phenomena.[2]

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[1] Wode, L1 vs. L2 Acquisition of Interrogation, pp. 4-5.

[2] Cazden, p. 212.

There are pedagogical implications to the L2 acquisition research reviewed earlier in this paper. With respect to children acquiring an L2, Dulay and Burt, on the basis of their research,advise us to "...leave the learning to the children."[1] They see the role of the teacher as one of providing a "natural communication situation " which will, in itself, be sufficient to activate the child's language learning processes. They characterize this "natural communication situation" as one in which the attention of the speaker and hearer is on content rather than form and in which there are clear and concrete referents for the major meaning-bearing elements of speech.[2] Milon advocates, on the basis of his study, maximal peer involvement and minimal teacher involvement. He believes the class should include a number of L2 speaking peers, and the teacher's role should be to "...insure interaction among the native speakers and the second language students in the class."[3] I believe Milon is right that immigrant children first learn the language of their peers <u>from</u> their peers, but there are immense practical problems involved in providing native speakers in all second language classrooms. Many L2 acquisition researchers feel that they cannot yet provide valid and reliable guidelines for classroom applications of their research, although they eventually hope to be able to do so.[4]

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[1]Dulay and Burt, p. 256.

[2]Ibid., pp. 256-257.

[3]Milon, p. 143.

[4]Tarone, "Limitations to Classroom Application," p. 19.

SUGGESTIONS FOR FURTHER STUDY

Dulay and Burt refer to the "universal language processing strategies described in the L1 research." Yet many researchers feel that to refer to these may be premature. Until more subjects have been studied acquiring more and different L1's, we may not really know what the strategies for L1 learning are.[1] Almost everyone agrees that insufficient attention has been paid to individual differences among children.[2] Slobin refers to "the semantic substratum of speech" and advocates that increased attention be paid to it in child language research.[3] One specific suggestion I would like to make is that a study be made of children's acquisition of English tag questions, and why they are acquired so late.

In the area of L2 acquisition research, even more remains to be done. Many seeming contradictions exist currently in the literature. It is felt, in general, that more complex approaches are needed which go beyond syntactic questions to take into account semantic, cognitive and pragmatic explanations

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[1]Elaine Tarone, A Discussion of the Dulay and Burt Studies (Bethesda, Md.: ERIC Document Reproduction Service, ED 123 876, October 1974), p. 1.

[2]Slobin, p. 193.

[3]Ibid., p. 182.

of the language acquisition process.[1] A discourse analysis framework, which takes into account social context, semantics, and the whole of communicative competence, should be used to examine the interlanguage product.[2] Learning strategies used by different individuals, "data-gatherers" vs. "data-organizers," for example, need to be studied. The methodologies for data collection and data analysis need to be developed. More cross-linguistic data are needed on L2 acquisition with various L1's. And, of course, replications of existing studies are needed.[3]

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[1]Bernard Spolsky, The Comparative Study of First and Second Language Acquisition (Bethesda, Me.: ERIC Document Reproduction Service, ED 143 218, March 1977), p. 32.

[2]Tarone, "Limitations to Classroom Application," p. 23.

[3]Cancino, p. 17.

APPENDIX 1
WH-QUESTIONS FROM SPONTANEOUS SPEECH

(Uninverted forms are followed by an asterisk. Intermediate forms are followed by two asterisks.)

4 years, 6 months - Affirmative Wh-questions

Why I have two?*
Why does this bread squeak?
Why is this thing here?
Why is that little cap here?
What were they gonna do?
Where's the microphone?
What does that mean?
Mommy, what does that mean?
Where d'you talk in?
What does that little green light mean?
What is this cookie?
Why are the little wheels going around?
When can I have ...?
What does "surely" mean?
Why we have to do it?*
What does that little light going,going off and on mean?
What does it mean?
Mommy, why did you put your head down?
Why is this banana on the table?
Why did you give me such a look?
Why you took all those spices out of those jars?*
Why d'ya wanna keep going?
Why d'ya gotta go, keep going?
What kinda juice do you have?
Why you have apple and I have milk?*
Why you have apple juice and I have milk?*
What means "preservatives"?*
What was there?
What was it?
What did the person have on?
What were they?
Mommy, what did this strange person have on?
What did the dog have on him?
Mommy, what else did the lady have on?
Hey, where'd my plate go?
What are preservatives?
What are chemicals?
Why is this stamp on here?
Why is there an extra knife?
Why are there three rolls of ...?
Why are there three tapes?
Where's my spoon?
Why you took the spices out of...of the jars?*
What are you writing?
Why it has to be there?*
Why am I hot?

4 years, 6 months - Negative Wh-questions
Why Daddy isn't here?*
Why I can't play with him?*
Why I can't eat standing up?*
Why I can never stay up late?*
Why I can't go with you?*
Why David has no shirt?*
Why you never let me rest?*
Why you're not making lunch?*
Why not that often you say yes?*
Why you're not taking my dirty dishes on the tray?*
Why you're not taping us?*
But why you didn't fold it?*

4 years, 8 months - Affirmative Wh-questions
Mommy, why did you put this in like this?
What is this for?
What's a sherish (sheriff)?
But what is this for?
Why this has a mouth and...?*
How old is David gonna be when it's his birthday?
Why Pippi wanted to go with her father?*
How old are you?
How old's your brother?
What happened to this?
Where did we get that new Pat the Bunny book?
Why David spat his food out?*
Where's my knife?
Who said that?
What does yellow and orange make?
Mr. Nilson, what are you doing?
Mr. Nilson, why are you laying down?
What are you doing?
Why do you have to do exercises at the table?
Why are you doing your exercises at the table?
But why do you have a fat stomach?
Why are you shaking your fingers like this?
How does your arm get stiff?
Mommy, how do you get stiff from just being still?
Mr. Nilson, what are you holding?
What are you painting?
What are you painting, Mr. Nilson?
Then why are you saying purple?
What does it say?
Mommy, what are you doing?
What's the matter, Mommy?
Where's David?
What is this called?
Mommy, how do you know Joan won't come?
What's the matter, Mr. Nilson?
Why are you lonely?
Where did you come from?

4 years, 8 months - Affirmative Wh-questions (con't.)
Mommy, what does this say?
What should I do with it?
What does this say again?
What does four and three quarters mean?
What is it called?
Mommy, what do they make out of...?
How do they make tuna fish?
But what makes all that water?
Then what might happen?

4 years, 8 months - Negative Wh-questions
Why can't I go to school today?
Why this has a little hole for the...for the pipe and this one doesn't?*
Why I can't cut with a sharp knife?*
Why do you don't wanna drink milk?**
Why when you're sick it's not good to take a bath?*
Well, why don't you try it?
Well, why don't I just take your hand and make you paint?
Why they don't call pork meat?*
Why they don't call pork pig?*
Why they don't call bacon pig?*
Why can't I do my exercises?

4 years, 10 months - Affirmative Wh-questions
What is this tape recorder here for?
What is this?
How did Paulie get those red sores on him?
What's he eating?
How old is Aisha?
Like what could happen?
Why are you crying?
What color d'you want to make?
What's the matter?
Well, what d'you want to do?
But which d'you want to do?
Mommy, where's that other paintbrush?
Mommy,what do you think we could do?
What happens if you paint?
What's a ba-ba?
Why are you shaking?
Why are you shaking?
Why are you shaking?
Why you're shaking?*
Why are you shaking?
Why are you shaking?
Why are you shaking?
Why are you shaking?
What's pollen?
Where's my cereal?
How can you tell me to come to breakfast if I don't have anything to eat?

4 years, 10 months - Affirmative Wh-questions (con't.)
Why is there a bite in it?
Why did you pick the second one?
Why did you put it on your head?
How will you...?
Who likes it?
Mommy, where's my toast?
Mommy, what does ph spell?
What does it say here?
What did you say?
What did he say?
Mommy, does this sound like a word?
Why do you want elephants?
What do you think this is getting to look like?
What are these X's and N's for?
Why did you put the N's and X's first?
What is this?
What were you trying to do?
What is his name?
Where is he going?
Why did you fold it?
Why are you rolling it up?
Why are you laying on this paper?
Why we threw it away?*
Mommy, how do they make yogurt?
Why did you say that?
Why d'ya say that they're yuck?
How many teachers did ya have?
Why did you say yuck cubbies?
What are these X's for, Mr. Nilson?
Mommy, what're ya gonna do?

4 years, 10 months - Negative Wh-questions
Mr. Nilson, why don't you wanna paint?
Why you don't wanna paint?*
So why don't you paint?
Why you can't?*
Why you can't paint?*
Why isn't it no good?
Why you don't wanna paint?*
Why don't you turn that up and then go on here?
Why you're not...?*
Mommy, why you didn't bring my cereal, too?*
Why isn't it hard and crackled?
Why don't you paint?
Why you don't like to go to school?*
Why d'ya don't like teachers?**
Why you don't like homework?*
Why you didn't like your cubby?*

APPENDIX 2
WH-QUESTIONS ELICITED EXPERIMENTALLY

The Old Lady Test (Directed Questions) - 4 years, 8 months
(Uninverted forms are followed by an asterisk.)

Experimenter: Ask him what he is.
Subject: What are you?
Subject: I'm a magician. He said he's a magician.
E: Ask him why he's a magician.
S: Why are you a magician?
S: Well, I like to do tricks and ... at the circus.
E: Ask him why he's wearing blue shoes?
S: Why are you wearing blue shoes?
S: Well, that's just what we wear on our feet. Blue shoes.
E: And ask him why he doesn't have any arms.
S: Why you don't have any arms?*
S: I don't know. I just do my magic with my ears.
E: Ask him why he doesn't have a magic wand?
S: Why you don't have a magic wand?*
S: Well, I just use...what I use for a magic wand is my pipe.
E: Ooooh. Ask him why he uses a pipe.
S: Why d'ya use a pipe?
S: Well, I looked in all the magic wand stores but they were all out of magic wands so I use my pipe.
E: Ask him why he doesn't have any hair.
S: Why you don't have any hair?*
S: Haven't you seen a mazician (magician) who's almost bald?
E: Ask him why he's smiling.
S: Why are you smiling?
S: Well, I like to smile.
E: Ask him why Curious George isn't here.
S: Why Curious George isn't here?*
E: Ask him why he doesn't have any legs.
S: Why you don't have any legs?*
E: Ask him why he has fur.
S: Why you have fur?*

Alligator Test (Analogy) - 4 years, 8 months
Experimenter: OK, we're going to play a game. OK? Now Bunny Baby is talking to her big brother. And this is her big brother. (show puppet) And he says a lot of things, and then she asks him questions. OK? So I just want you to listen to them for a while. And after you listen to them for a while, then I'm gonna let you be Bunny Baby and let you ask the questions. So listen very carefully. This is the Big Brother talking.
Brother: Jannine is home from school today.
Bunny Baby: Why is Jannine home from school today?
Brother: Somebody has to go to the store this morning.
Baby: Why does somebody have to go to the store this morning?
Brother: A baby bunny should eat carrots every day.

Experimenter (con't.):
Baby: Why should a baby bunny eat carrots every day, Brother?
Brother: Baby David has to eat some vegetables.
Baby: Why does Baby David have to eat some vegetables?
Brother: Daddy's coming home very late tonight.
Baby: Why is Daddy coming home very late tonight?
OK! Now <u>you</u> be Bunny Baby for a while. OK?
Subject: I don't like to be Bunny Baby.
Experimenter: Yeah, but for this research I really <u>need</u> you to be Bunny Baby. We'll just try it for a while. Are you ready?
David has his sister's socks on.
Subject: Why does...why does...why does Baby David have his sister's socks on?
E: Very good. Let's try another one. We need something from the bakery.
S: Why d'we need something from the bakery?
E: Zippora's home from school today.
S: Why's Zippora home from school today?
E: Annette will be here next week.
S: Why will Annette be here next week?
E: Uncle David always lets Paul drink soda.
S: Why does Uncle David always let Paul drink soda?
E: Daddy has some stains on his shirt.
S: Why does Daddy have some stains on his shirt?
E: Um-hum. There's somebody yelling outside in the hallway.
S: Why is there somebody yelling outside in the hallway?
E: Aunt Franny may be able to come to David's baptism.
S: Why will...why is Aunt Franny...Why is Aunt Franny able to come to David's baptism?
E: Baby David can have ice cream today.
S: Why does Baby David have to have ice cream today?
E: Um-hum. Zippora was home from school yesterday.
S: Why Zipp...was Zippora home from school yesterday?*
E: Um-hum. This toy could be dangerous.
S: Why this toy could be dangerous?*
E: Somebody has to stay with Baby David.
S: Why somebody has to stay with Baby David?*
E: David ate his apple core.
S: Why did David eat his apple core?
E: David has his sister's socks on.
S: Why does David have his sister's socks on?
E: When she was little, Aunt Franny would always sing in the bathtub.
S: Why when she was little Aunt Franny would always sing in the bathtub?*
E: Baby Jamie still needs a bottle.
S: Why does Baby Jamie still need a bottle?
E: We need something from the bakery.
S: Why do we need something from the bakery?
E: David may have one more cracker.
S: Why does David have to have one more cracker?

Alligator Test (Analogy) (con't.)
E: A child should drink milk every day.
S: Why should a child drink milk every day?

(continued at a later time)
Experimenter: We are going to play another game. Bunny Baby is talking to her big brother. He says things, and then she asks questions. I want you to listen for a while. OK?
Brother: A baby rabbit can't have soda.
Baby: Why can't a baby rabbit have soda?
Brother: Mommy isn't coming home for dinner tonight.
Baby: Why isn't Mommy coming home for dinner tonight?
Brother: Lisa Kim never sees her grandparents.
Baby: Why doesn't Lisa ever see her grandparents?
Brother: Mommy doesn't speak Chinese.
Baby: Why doesn't Mommy speak Chinese?
Brother: Monster Baby has no friends around here.
Baby: Why doesn't Monster Baby have any friends around here?
OK. Now <u>you</u> be Bunny Baby. OK?
Experimenter: Skinny Rabbit isn't here.
Subject: Why isn't Skinny Rabbit here?
E: Mommy didn't make breakfast yet.
S: Why Mommy didn't make breakfast yet?*
E: A baby rabbit can't have peanuts.
S: Why a baby rabbit can't have peanuts?*
E: Annette won't be here next week.
S: Why Annette won't be here next week?*
E: Monster Baby isn't playing this game.
S: Why Monster Baby isn't playing this game?*
E: Baby David hasn't had his bath today.
S: Why Baby David hasn't had his bath today?*
E: A baby rabbit shouldn't eat candy before lunch.
S: Why a baby rabbit can't have candy before lunch?*
E: Daddy wouldn't let you make noise in the car.
S: Why Daddy wouldn't let me make noise in the car?*
E: Daddy couldn't come to David's birthday party.
S: Why Daddy couldn't come to David's birthday party?*
E: Skinny Rabbit doesn't have any friends.
S: Why Skinny Rabbit doesn't have any friends?*
E: David doesn't have anybody to play with today.
S: Why David doesn't have anybody to play with today?*
E: Skinny Rabbit doesn't have any brothers or sisters.
S: Why Skinny Rabbit doesn't have any brothers or sisters?*
E: There isn't anything on TV right now.
S: Why there isn't anything on TV right now?*
E: Mommy doesn't ever take naps.
S: Why Mommy doesn't ever take naps?*
E: David doesn't get a bottle any more.
S: Why David doesn't get a bottle any more?*
E: Daddy never eats breakfast.
S: Why Daddy never eats breakfast?*

Alligator Test (Analogy) (con't.)

E: Nobody's playing in the courtyard.
S: Why nobody's playing in the courtyard?*
E: We can't go anywhere today.
S: Why we can't go anywhere today?*
E: David doesn't take naps anymore.
S: Why David doesn't take naps anymore?*

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